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ABSTRACT

A study investigated the effect of underlining, naturally occurring prior knowledge, induced prior knowledge, and placement order of text information on students' immediate and delayed recall of unfamiliar text. Two reading passages of approximately 800 words were generated on the topic of computers, each with sections of information judged familiar and unfamiliar to students. Subjects from a pool of 400 grade 8 students were assigned to treatment conditions of prior knowledge inducement or no-inducement and underlining or no-underlining. Before reading the passages on computers, the induced prior knowledge group was directed to take notes during a lecture on computers, while the no-induced prior knowledge group took notes on an unrelated lecture. Immediately following and one week after reading the passage, students were administered open ended and multiple choice questions. Test results from 108 subjects in the underlining and nonunderlining groups were compared and underlining analysis was done on 66 subjects. Results showed no significant differences between the underlining and no-underlining groups on any of the measures. The absence of significant results supports the notion that process by which prior knowledge, text, and text processing strategies interact and affect the learning of new information from text is indeed complex and worthy of continued scrutiny. (HTH)

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Effects of Prior Knowledge, Text-Order and Underlining on Recall of Information From Text

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Recent findings in studies of prior knowledge and recall of information from text have led to some assumptions about learning from text that may be oversimplifications of a far more complex process. Three of these assumptions are related to this study. First, it is widely held that the more prior knowledge the reader has about a topic the more the reader is likely to learn from reading a text on that topic. Support for this notion is provided by Langer & Nicolich (1981). However, it is possible that a reader may over-rely on prior knowledge and

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not pick up information in text, especially unfamiliar information (Maria & MacGinitie, 1980; Spiro, 1979). A second assumption supported by the literature (Ausubel & Fitzgerald, 1961) is that giving the reader familiar information before unfamiliar information in text facilitates learning. On the other hand, it is possible that some readers, on encountering familiar information at the beginning of a passage, might assume that they already know the information in the entire passage and fail to read the passage carefully. Finally, it would seem that strategies that lead to more active processing of text would enhance what is recalled from text (Hanson & Pearson, 1980). However, perhaps there is not a simple causal relationship.

This research was the third in a series of studies exploring the effects of prior knowledge and the placement of information in text on the recall of unfamiliar information in text. These studies differed from most previous prior knowledge studies which focused on recall of information in text by examining the recall of only unfamiliar information. However, it is often the unfamiliar information that a student most needs to comprehend and remember from a text. In the first study (Davey & Kapinus, 1983) it was found that subjects with high prior knowledge did significantly better on passages that began with unfamiliar information rather than on passages beginning with familiar information. Placement of information in text did not have a significant effect on recalls of subjects with low prior knowledge. In an additional study (Kapinus, 1982), it was found that, in addition to the above-mentioned effect of placement order of information, induced prior knowledge

increased recall significantly only for subjects with high naturally occurring prior knowledge who read passages beginning with unfamiliar information. The study reported here was essentially a replication of that study with the addition of underlining as a treatment variable. The purpose of this study was to determine the effect of underlining, naturally occurring prior knowledge, induced prior knowledge and placement order of information in text on immediate and delayed recall of unfamiliar information from text.

Method

Subjects

Subjects were taken from a pool of 400 eighth graders in three suburban Maryland public schools judged to be average to above average readers by classroom teacher judgement and scores on the reading subtest of the California Achievement Test. The final sample for comparison of underlining and no underlining groups included 108 subjects after incomplete data and unmatched students were discarded. Sixty-six subjects were included in the multivariate analysis of covariance among the students using underlining.

Materials

Two passages of about 800 words were generated on the topic of computers. One section of each passage contained information about computers that was judged familiar to most eighth graders based on prepilot protocols of 44 eighth graders not included in the study. The other section contained information about computers that did not occur

in the prepilot protocols or occurred only once. The passages were identical except for the placement of the two sections. One passage had the unfamiliar information section followed by the familiar section and then a closing general paragrpah. The other passage had the familiar section followed by the unfamiliar section and the same final paragraph. Readability was determined to be about seventh grade level (Fry, 1977). Readability was further checked by having 12 eighth grade students read the passage orally. The maximum number of miscues that was made was four.

Eight open-ended questions about computers and 20 true-false questions were used to measure naturally-occuring prior knowledge. Recall was measured by the same open-ended questions and two sets of 10 multiple-choice questions for immediate and delayed recall.

Procedures

From the pool, students were assigned in classroom groups to treatment conditions of prior knowledge inducement or no inducement and underlining or no underlining. Passage conditions of familiar/unfamiliar and unfamiliar/familiar order were assigned randomly. Students from the underlining and no underlining conditions were matched on reading achievement score and conditions of passage order and prior knowledge inducement.

The study was conducted over two weeks. On the first day, subjects were given the two measures of prior knowledge, open-ended questions and true-false questions. On the second day, subjects in the induced prior knowledge group were directed to take notes in a three-column format

during a lecture on computers. Subjects in the no-induced prior knowledge group took notes in the same format on sports. On the third day subjects were given the passage on computers to read. The no-underlining group received instructions to read the passage carefully in order to be able to answer some questions about it. Subjects in the underlining group were told to read the passage and underling only information which was completely new to them. They were also told that they would be given questions on the passage. After they read the passage, subjects were given the open-ended questions and then the multiple-choice questions. One week later, they were given the open-ended questions again and another set of multiple choice questions.

Results

Responses to the open-ended questions were scored for unfamiliar information units from the passage using lists of acceptable terms. Two additional raters, when given random samples (11 each) of responses to open-ended questions, had an inter-rater reliability of .96.

In order to test the effect of underlining two-tailed t tests were performed on the four dependent measures: open-ended questions, immediate recall; multiple-choice questions, immediate recall; open-ended questions. delayed recall; multiple-choice questions, delayed recall. No significant differences were found between the groups on any of the measures.

In order to determine whether the group using underlining displayed the same differenced between treatments for passage and prior knowledge as the subjects in the previous study (Kapinus, 1982) a multivariate analysis of covariance was used after it was determined that the variables

met the assumption of homogeneity of regression. Again, no significant differences were found among groups.

Discussion

Although there were no significant treatment differenced found in this study, the results are intriquing. It would seem that having students more actively involved in text processing by underlining new information would enhance the recall of unfamiliar information from text. The absence of significant differences between underlining may be attributable to at least two factors, the relatively small sample size and the failure to provide any training or practice in underlining. Future research attempts should address these problems.

The finding of no significant differences among groups in the underlining sample raises a number of questions. Does the underlining activity impede the performance of high prior knowledge students or enhance the performance of low prior knowledge students? This effect does not seem likely given that there were no significant differences between the underlining and no underlining groups. It is also possible that the small sample size (66) compared to that of the previous study (190) may have been a factor in the lack of significant findings.

The absence of significant results supports the notion that the process by which prior knowledge, text and text processing strategies interact and affect the learning of new information from text is indeed complex and worthy of continued scrutiny.

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